USERS GUIDE

JPX Series

JPX-TX1 / JPX-RX1

JPEG2000 IP Distribution

JPX-TX1

JPX-RX1

Manual Number: 140731

SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.

The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product.

The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.

Be careful with electricity:

- **Power outlet**: To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use only the power adapter and power connection cables designed for this unit.
- **Power cord**: Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning**: For protection from lightning or when the product is left unattended for a long period, disconnect it from the power source.

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Also follow these precautions:

- **Ventilation**: Do not block the ventilation slots if applicable on the product or place any heavy object on top of it.

  Blocking the air flow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating**: Avoid stacking the Aurora product on top of a hot component such as a power amplifier.
- **Risk of Fire**: Do not place unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections**: Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry**: To avoid electric shock, never stick anything in the slots on the case or remove the cover.
- **Water Exposure**: To reduce the risk of fire or electric shock, do not expose to rain or moisture.
- **Cleaning**: Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD**: Handle this unit with proper ESD care. Failure to do so can result in failure.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

Trademarks

All trademarks in this document are the properties of their respective owners.

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PACKAGE CONTENTS

Please make sure the following items are included within your package. Contact your dealer if any items are missing or damaged.

JPX-RX1

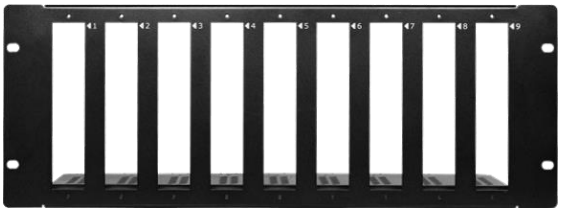
- 1 qty JPX-RX1 Receiver Decoder Unit
- 1 qty 12v DC Power Supply
- 2 qty 3 pos Phoenix Male Connectors
- 2 qty Mounting Ears

JPX-TX1

- 1 qty JPX-TX1 Transmitter Encoder Unit
- 1 qty 12v DC Power Supply
- 1 qty 3 pos Phoenix Male Connectors
- 2 qty Mounting Ears

Optional Accessories

- JPX-RK4 4RU Rack Mount



Note: Go to www.auroramm.com for latest manual and firmware

INTRODUCTION

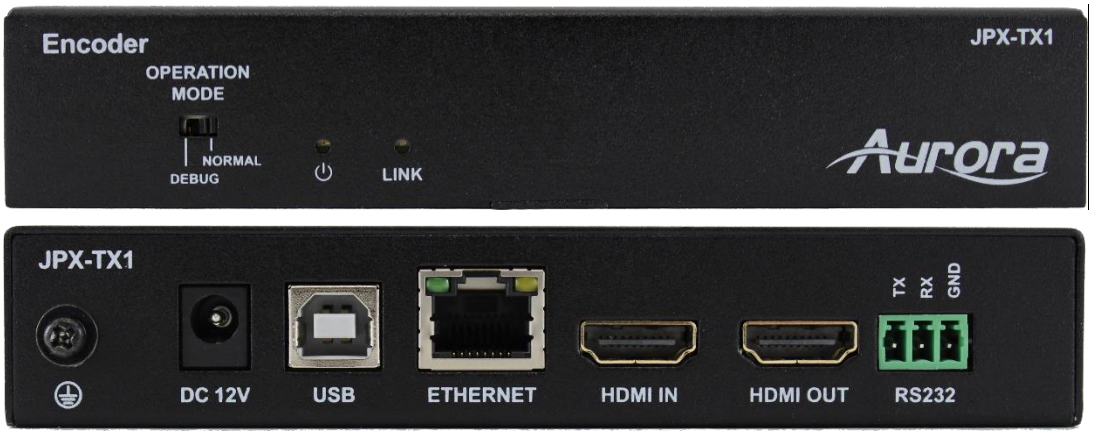
About

The JPX Series is a JPEG2000 visually lossless HDMI over IP which allows you to simultaneously send out an HDMI Signal (1080p video with 2.1 audio, USB & RS-232) to one or more HDMI video display devices using CAT5e/6/7 Cable over a standard Ethernet infrastructure. The JPX Series can be used to distribute HD digital content from multiple sources to many destinations on a LAN. AV signals are transmitted digitally over a CAT5e/6/7 cable with visual lossless quality with low latency. Internal video compression adapts to available network bandwidth if needed. The series also has a Videowall mode capabilities making it perfect for low cost digital signage applications. The RS-232 can be used to remotely control devices from any receiver or transmitter location. A USB signal can also be passed through with the RS-232 and HDMI signal making the JPX Series a single cable solution.
Computer software is available for full control and management or the optional HJ-PXC can be used to interface with control systems or other devices via LAN.

Features

- **HDMI Encoding and Decoding using JPEG2000**
- **Switching Matrix when multiple units are used**
- **Low Latency**
- **Videowall modes**
- **Extend the transmission distance to at least 100 meters from a source at 1080p**
- **USB signal transmission, Supports USB 2.0**
- **RS232 control signal transmission**
- **Supports all high definition resolutions: 1080p, 1080i and 720p**
- **HDCP compliant**
- **PoE (Power over Ethernet)**
- **Optional IP control box (HJ-PXC) to allow matrix control and management via LAN for control systems.**

JPX-TX1 Front & Rear



Front

- Operation Mode Switch – Normal mode: Transmit RS-232 Signal between TX & RX, Debug mode: Debug the unit.
- Power LED – LED will light RED when power is applied.
- Link LED - The LED will light solid blue when a TX and RX are linked to each other.

Rear

- GND Symbol – Ground connection
- DC 12V – Connection to 12v / 2A power supply
- USB – USB Type B connection to HOST PC
- Ethernet – 10/100/1000Mbps LAN
- HDMI In – HDMI input signal to be encoded and transmitted.
- HDMI Out – HDMI Local Loop Out
- RS-232 – Serial port control

JPX-RX1 Front & Rear

Front

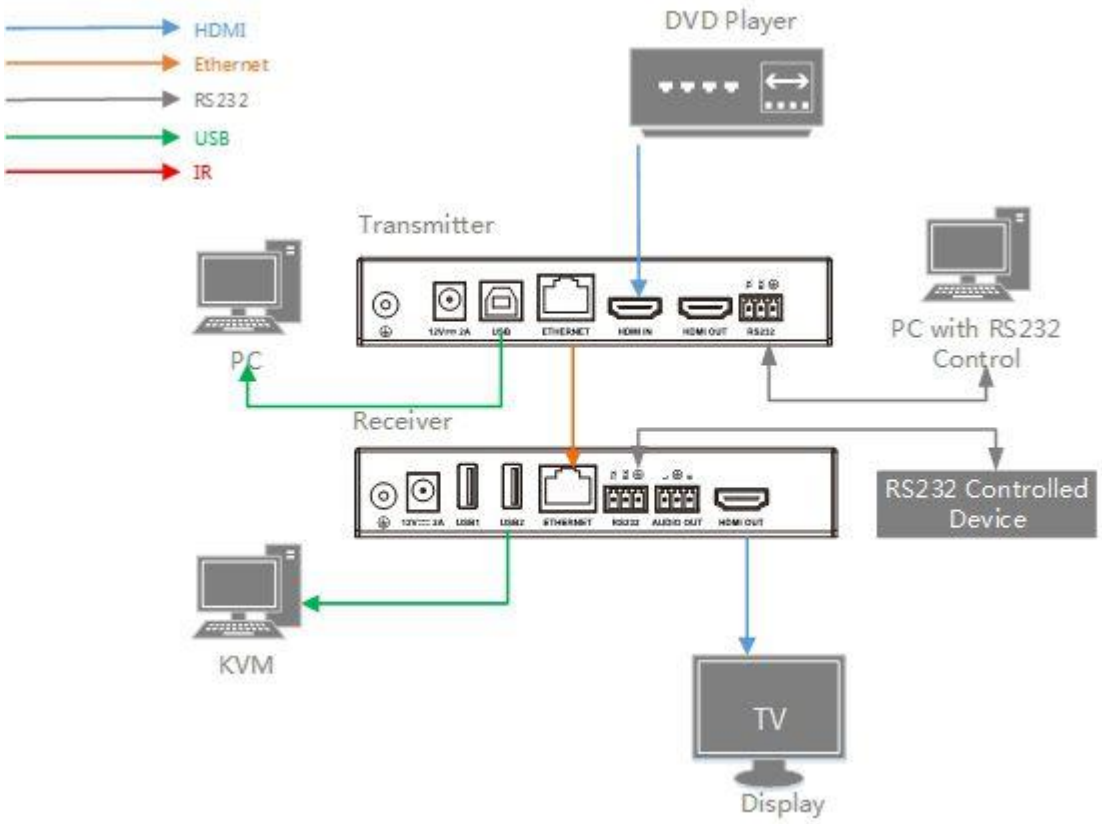
- Operation Mode Switch – Normal mode: Transmit RS-232 Signal between TX & RX, Debug mode: Debug the unit.
- Power LED – LED will light RED when power is applied.
- Link LED - The LED will light solid blue when a TX and RX are linked to each other.
- USB3 – USB 2.0 Type A to be connected to a device (ex. Mouse, keyboard, etc)
- USB4 – USB 2.0 Type A to be connected to a device (ex. Mouse, keyboard, etc)

Rear

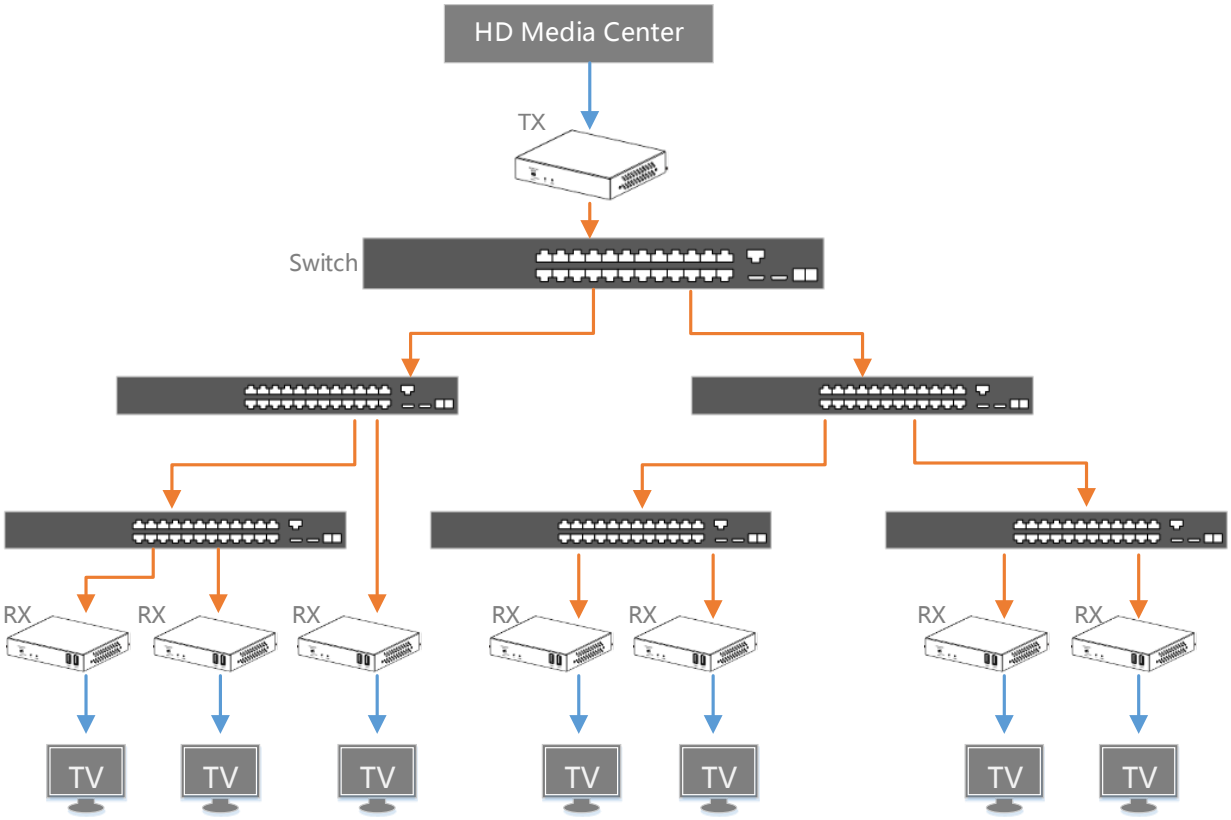
- GND Symbol – Ground connection
- DC 12V – Connection to 12v / 2A power supply
- USB1 – USB 2.0 Type A to be connected to a device (ex. Mouse, keyboard, etc)
- USB2 – USB 2.0 Type A to be connected to a device (ex. Mouse, keyboard, etc)
- Ethernet – 10/100/1000Mbps LAN
- Audio Out –Audio de-embedded output
- HDMI Out – HDMI Output to Display
- RS-232 – Serial port control

APPLICATIONS

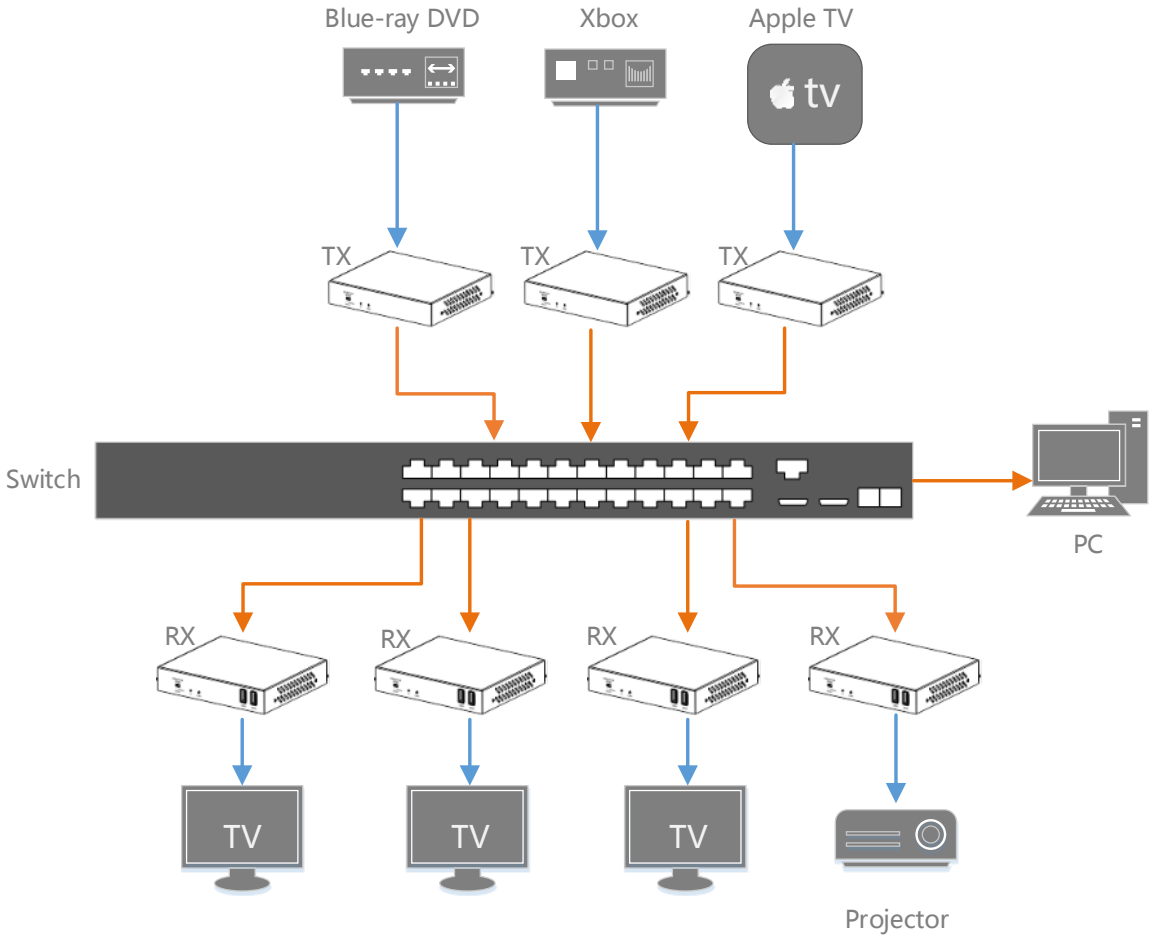
Example 1 JPX-TX1 Transmitter to JPX-RX1 Receiver



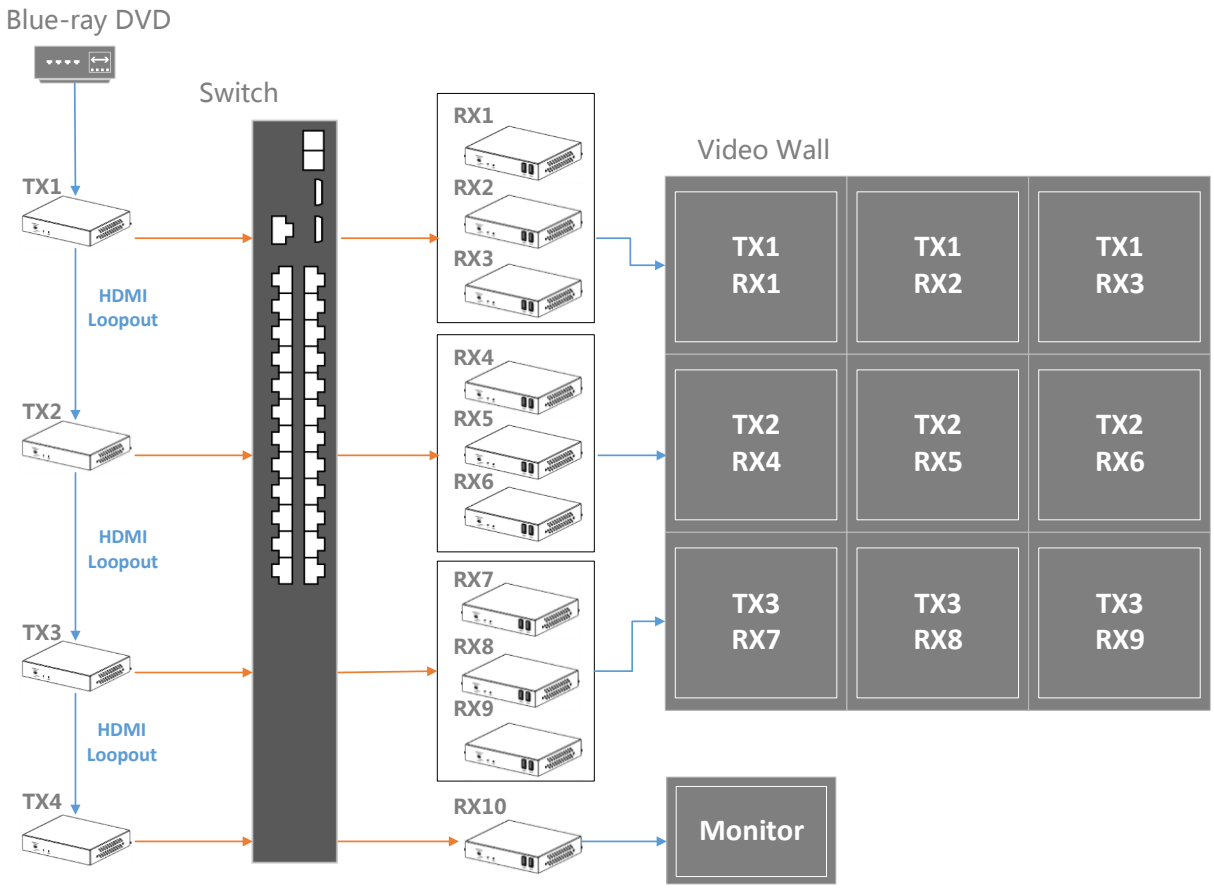
Example 2 JPX-TX1 Transmitter to Multiple JPX-RX1 Receivers



Example 3 Multiple JPX-TX1 to Multiple JPX-RX1

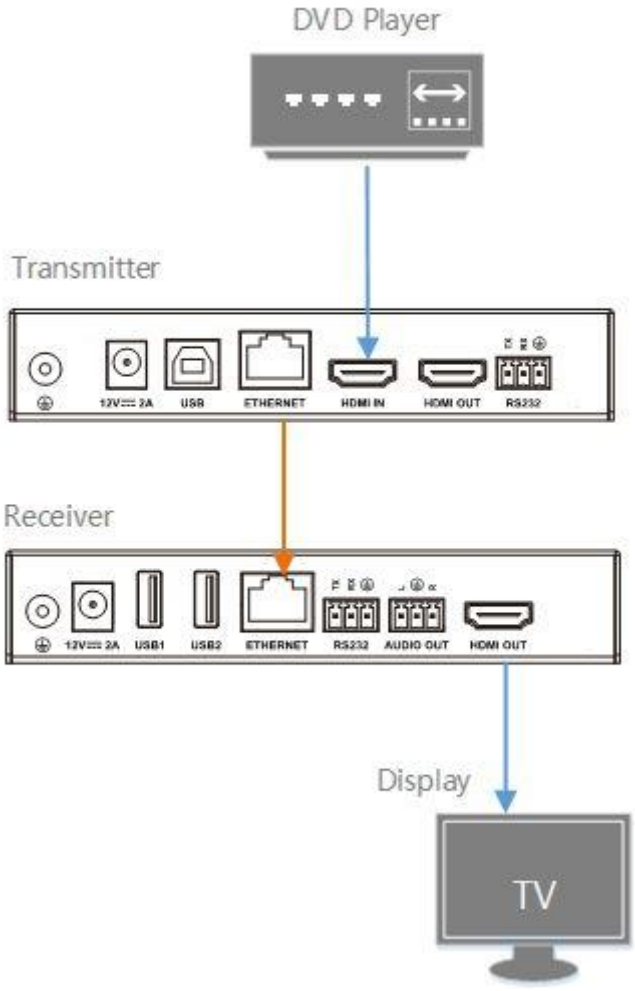


Example 4 Video Wall



HARDWARE INSTALLATION

1. Connect HDMI source (such as a DVD player) to the transmitter JPX-TX1
2. Connect computer to the JPX-TX1 with USB cable.
3. Connect HDMI display (such as a plasma TV) to the receiver JPX-RX1
4. Plug USB device (such as keyboard, mouse etc.) to the USB jack of JPX-RX1.
5. Connect CAT-5/5e/6 cables between the transmitter and receiver, make sure CAT-5/5e/6 cables are tightly connected and not loose.
6. Plug in 12V DC power cord to the power jack of JPX-TX1 and JPX-RX1.



OPERATION

PC Control Tool

Installation

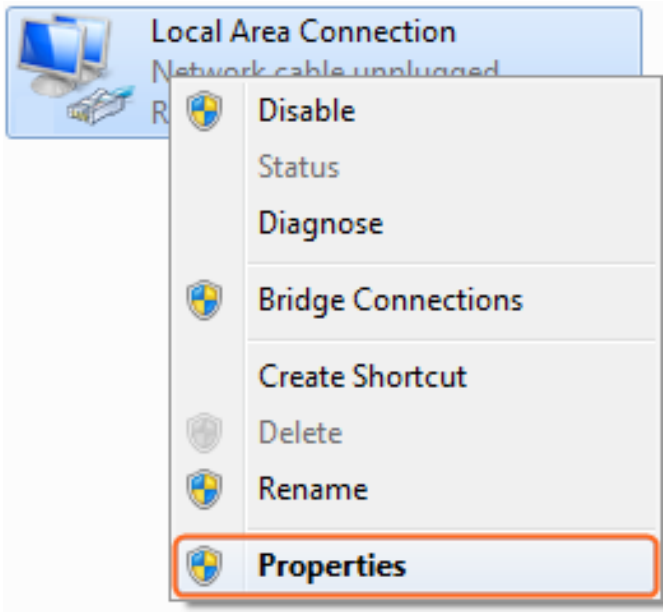
1. Obtain the installation package of the HDMI over IP configuration tool **HJ Control V2.4.14.zip.** Double-click **HJ Control.exe** to start the tool.

Note: The Operation System must be Windows XP or a later version.

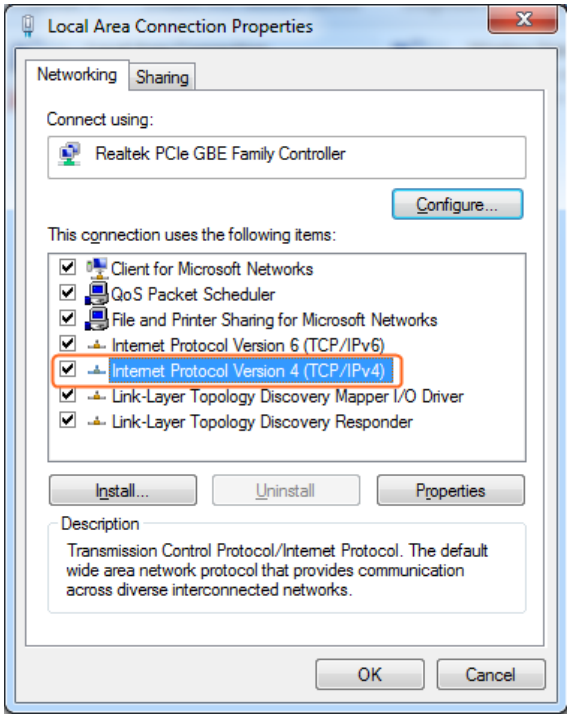
You can control the device through the web management page of IP control box as well. For details, please refer to the User Manual of IP control box

2. Set a static IP on the computer, here take Window 7 as an example.

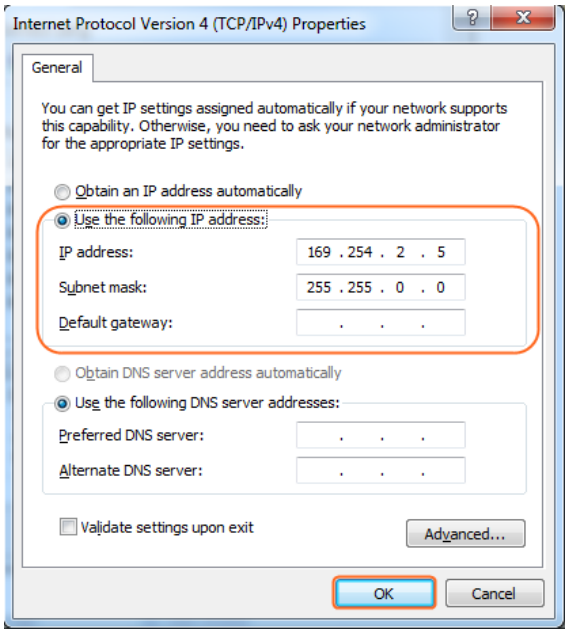
Step 1. Click **Start** menu, go to **Control Panel** > **Network and Sharing center** > **Change Adapter Settings** > **Local Area Connection**, right click it, choose **Properties**.



Step 2. Highlight **Internet Protocol Version 4 (TCP/IPv4)**, click **Properties**.

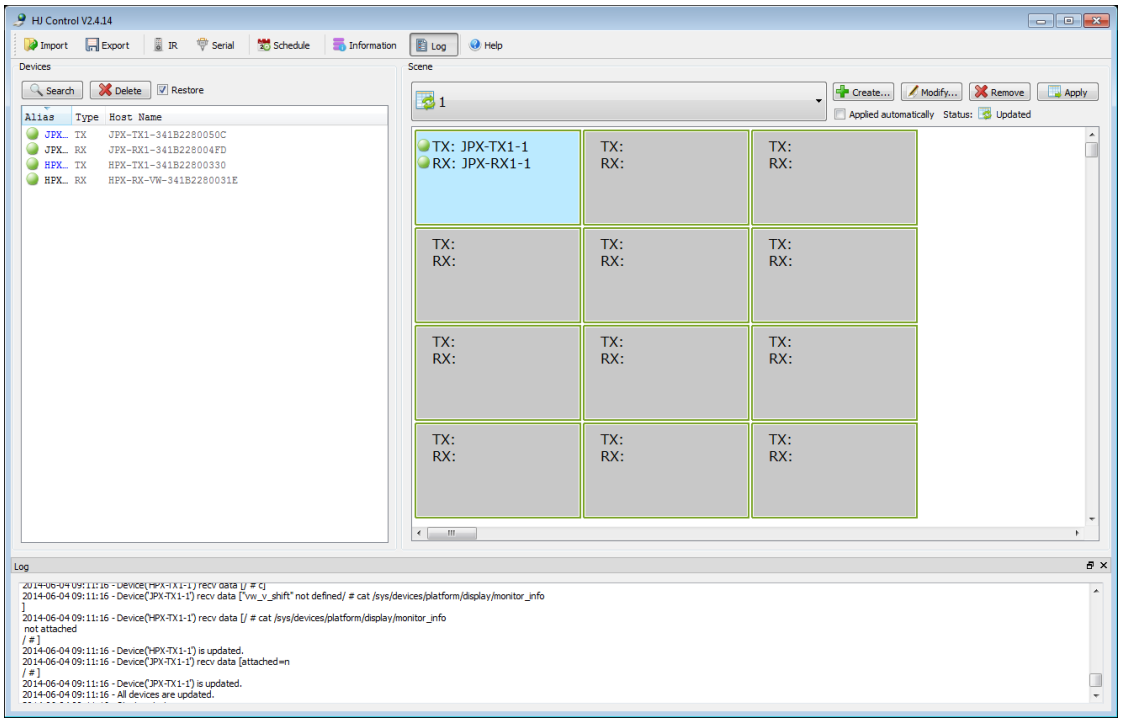


Step 3. Check **Use the following IP address**, the **IP address** enter 169.254.x.x (here take 169.254.2.5 as an example), the **subnet mask** enter 255.255.0.0. Click **OK**, then click **OK** again.

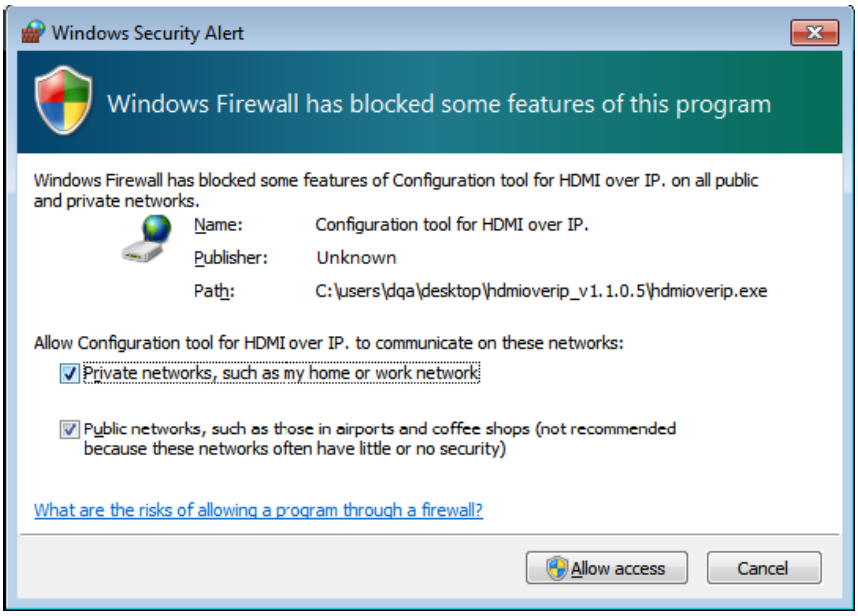

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 169 . 254 . 2 . 5
Subnet mask: 255 . 255 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Searching Devices

Click **Search** in the Device list area. The search is started. When completed it will list the devices found on the network and the "Restore" (previous scene) will be checked by default.



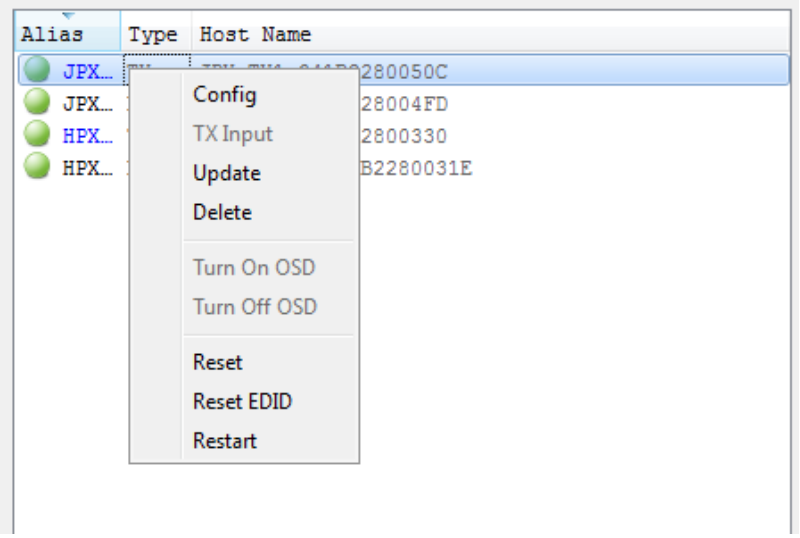
Note: If the Windows Security Alert dialog box comes up, check both boxes and click Allow access (with Administration Authority)


Windows Security Alert
Windows Firewall has blocked some features of this program
Windows Firewall has blocked some features of Configuration tool for HDMI over IP. on all public and private networks.
Name: Configuration tool for HDMI over IP.
Publisher: Unknown
Path: C:\users\dqa\desktop\hdmioverip_v1.1.0.5\hdmioverip.exe
Allow Configuration tool for HDMI over IP. to communicate on these networks:
Private networks, such as my home or work network
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)
What are the risks of allowing a program through a firewall?
Allow access
Cancel

If no device is found, please refer to problem 1 in **Error! Reference source not found.**.

Setting Device Parameters

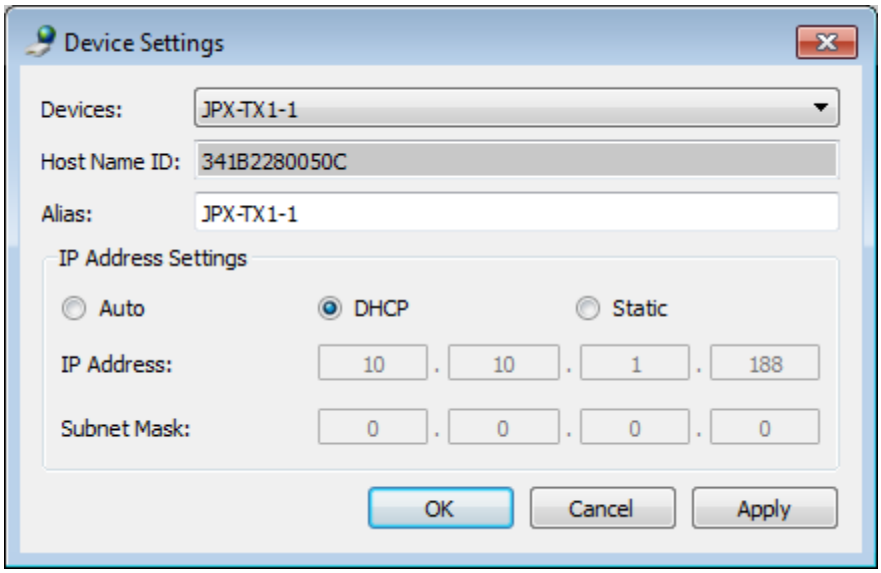
Right click a device in **Devices**, all the authorized operations are displayed in the shortcut menu.



Operation	Description
Config	Modify device parameters. This operation is valid only when a single device is selected.
Update	Update device status, such as Alias, Type, etc. This operation is valid when one or more devices are selected.
Delete	Delete the devices. This operation is valid when one or more devices are selected.
Turn On OSD	Turn on On-screen Display. On-screen Display identifies which device is connected to TX. For example, highlight a TX, choose Turn On OSD, the device which TX connected to will display “123456”.
Turn Off OSD	Turn off On-screen Display.
Reset	Restore the device to factory settings. This operation is valid when one or more devices are selected. After **Reset**, it’s recommended to **Delete** and **Search** to search the device again
Reset EDID	Reset Extended Display Identification Data. This operation is valid when a TX device is selected.
Restart	Restart the device. This operation is valid when one or more devices are selected.

Device Settings

Right click a device in **Devices** and choose **Config**, the **Device settings** dialog box is displayed.



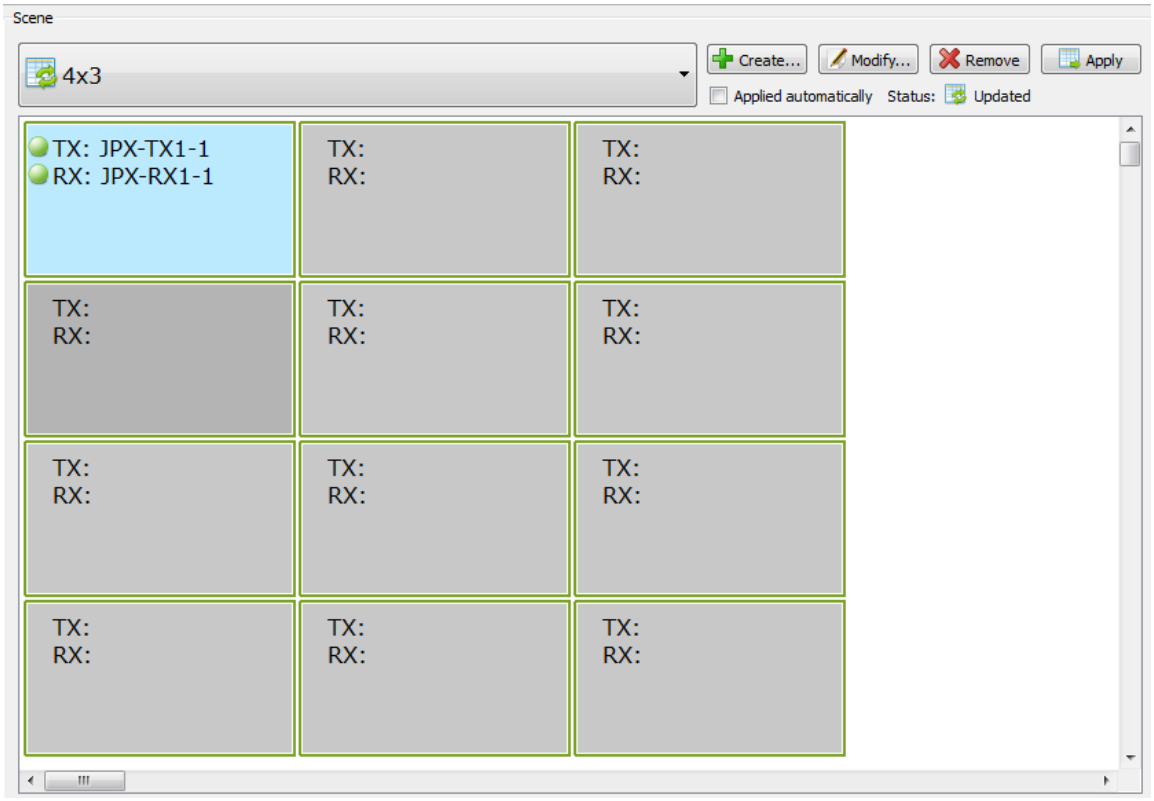
GUI Element	Description
Devices	The current device.
Host Name ID	The Host Name ID, which is generated by the system and cannot be changed.
Alias	The user-defined device name that contains a maximum of 80 characters.
IP Address	The device IP address, which can be set only when the static mode is selected.
Subnet Mask	The subnet mask for the device, which can be set only when the static mode is selected.
Auto	Obtain the IP address automatically.
DHCP	The IP address is assigned by a router or switch.
Static	The IP address is manually configured. If you choose Static, enter 255.255.0.0 in **Subnet Mask**.

Restart the current device after performing any operation in the **IP address** area. If the IP address assignment mode is changed from **Static** to **Auto** or **DHCP**, re-search the device after it is restarted.

Scene Setting

Connecting Devices

The **Scene** displays the current status of devices.

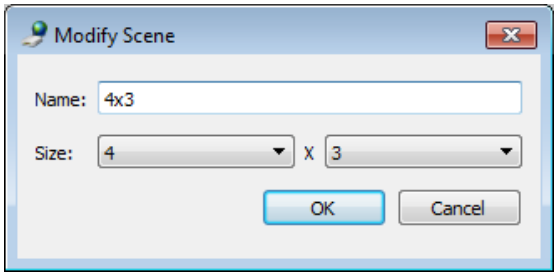


GUI Element	Description
Create	Create a scene.
Modify	Modify the current scene.
Remove	Delete the current scene.
Apply	Apply the scene connection settings.
Applied automatically	Check this option, it automatically applied the settings. We recommend you check this option.
Status	The status of the scene. The matrix is restored. In progress. Apply settings successfully. Failed to apply settings.

You can move the TX and RX from the left devices list to specific cells in the right table and apply the scene setting.

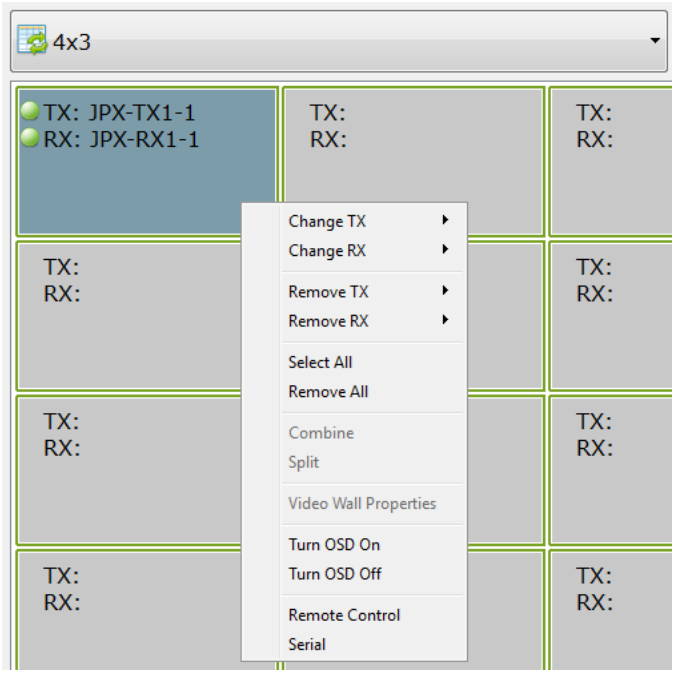
Modifying the Scene

After your click **Modify** in the Scene area, the Modify Scene dialog box is displayed.



Give the scene a name, the maximum length is 80 characters.

Right click a cell, all the authorized operations are displayed in the shortcut menu.



GUI Element	Description
Change TX	Change TX.
Change RX	Change RX.
Select All	Select all the cells in the Scene.
Turn OSD On	Turn on on-screen display.
Turn OSD Off	Turn off on-screen display.
Remove TX	Remove TX.
Remove RX	Remove RX.

Combine	This operation is valid when at least two boxes are selected. For details, refer to Video Wall Settings.
Split	This operation is valid when at least two boxes are selected. For details, refer to Video Wall Settings.
Remote control	IR remote control, not supported yet.
Video Wall Properties	This operation is valid when there are combined signals.

Videowall Setting

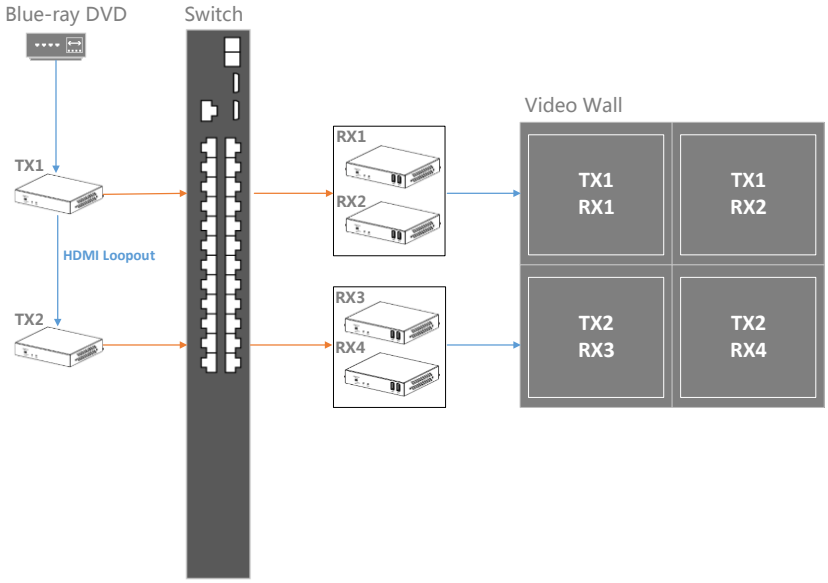
The Video-wall combines multiple display (RX) devices to show a complete video source. Select multiple display devices in the scene setting interface, and combine the cells.

Follow these steps to configure the Video-wall, here we take a 2 x 2 scene as an example:

Preparation:

1. Two Transmitters JPX-TX1
2. Four Receivers JPX-RX1
3. A Switch with PoE
4. A HDMI source such as a Blue-ray DVD
5. Four display devices
6. Several HDMI cables and Ethernet cables

Hardware Connection:

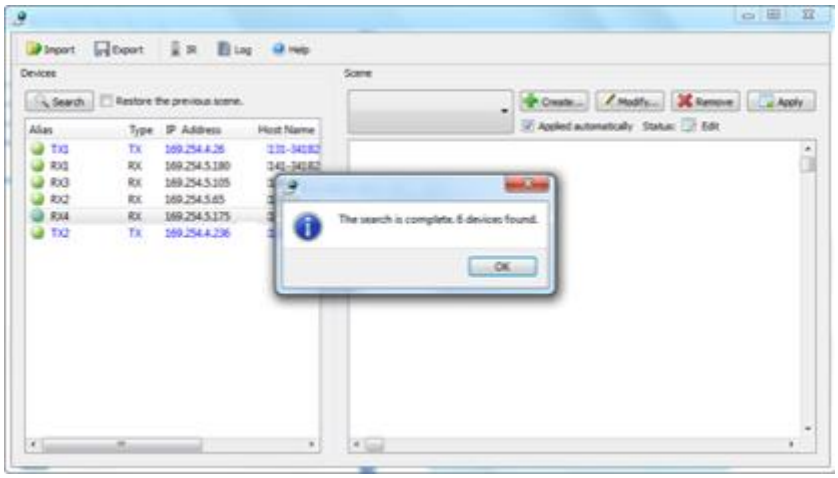


1. Connect the Blue-ray DVD to HDMI IN port of TX1 with a HDMI cable, connect HDMI OUT port of TX1 to HDMI IN port of TX2.
2. Connect TX1 and TX2 to the Switch with Ethernet cables.
3. Connect RX1, RX2, RX3, and RX4 to the Switch with Ethernet cables.
4. Connect HDMI OUT port of RX1, RX2, RX3, RX4 to the display devices with HDMI cables.
5. Power on all the devices

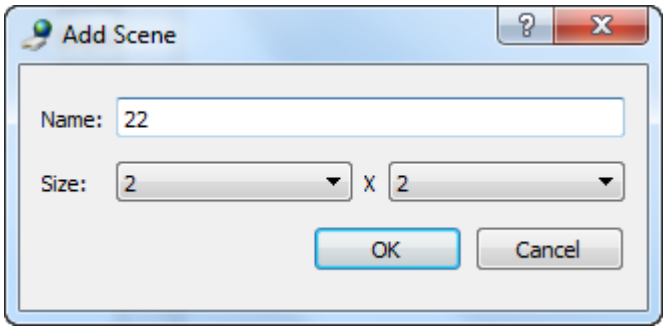
Note: If the Switch doesn't support PoE function, please remember to plug in the power adapters of Transmitters/Receivers

Operation:

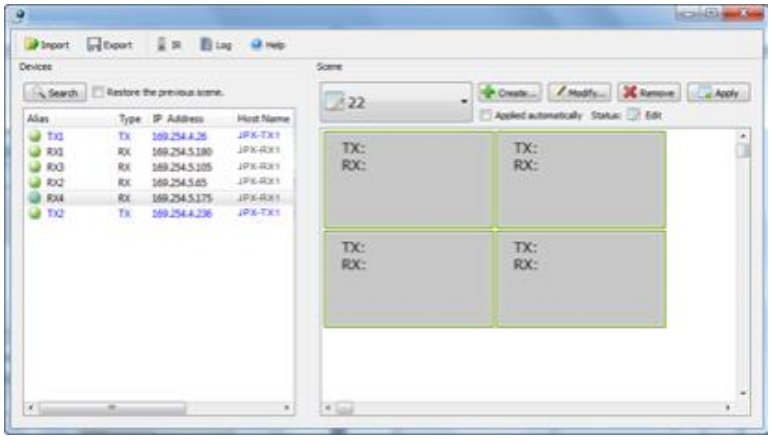
Step 1. Run **HJ Control**, click **Search** button.



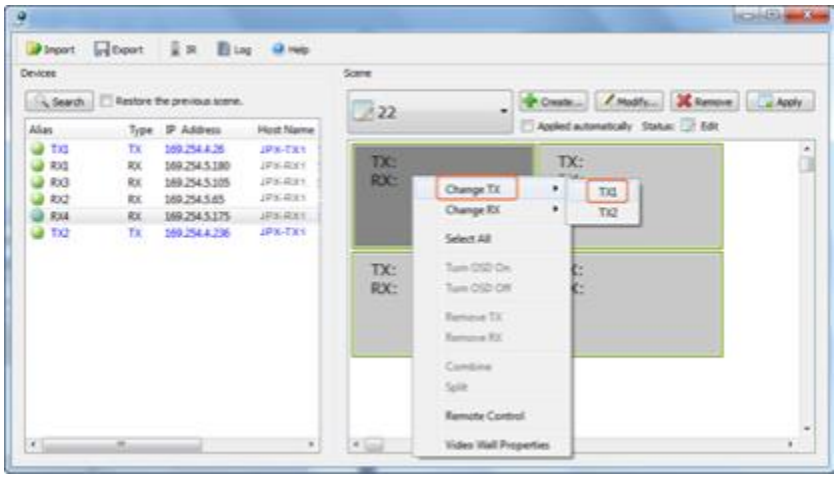
Step 2. Click **Create** button to create a 2 x 2 scene.



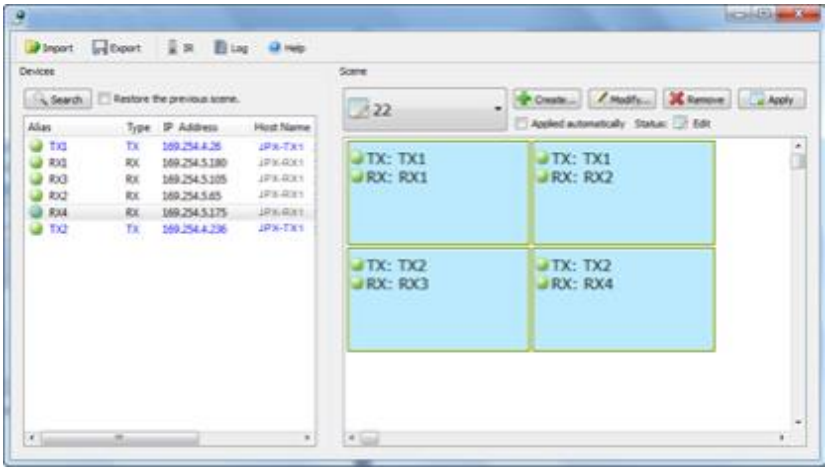
Click **OK**, a 2 x 2 scene comes up.



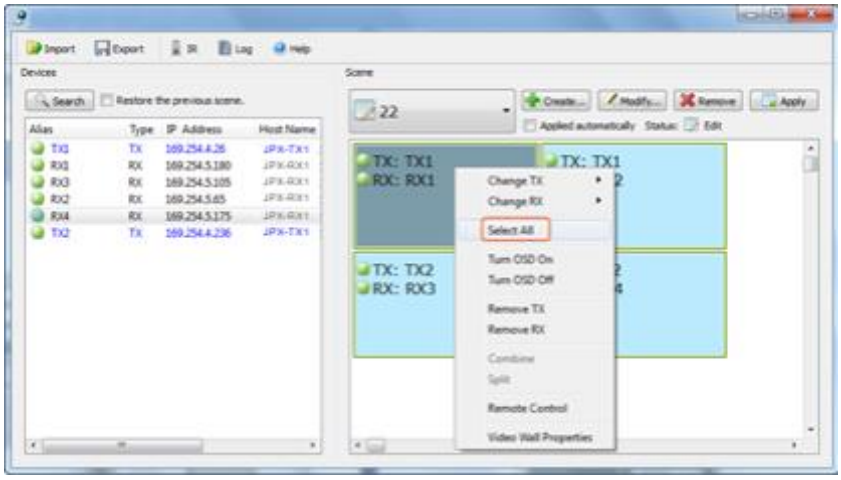
Step 3. Link the TX and RX. Highlight the first cell, right click it, choose **Change TX**, and click **TX1**. Then choose **Change RX**, click **RX1**.



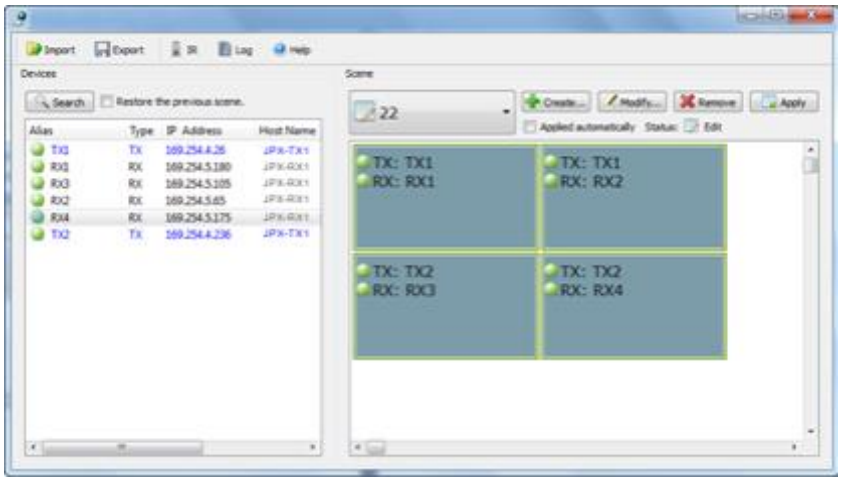
The rest can be done in the same way.



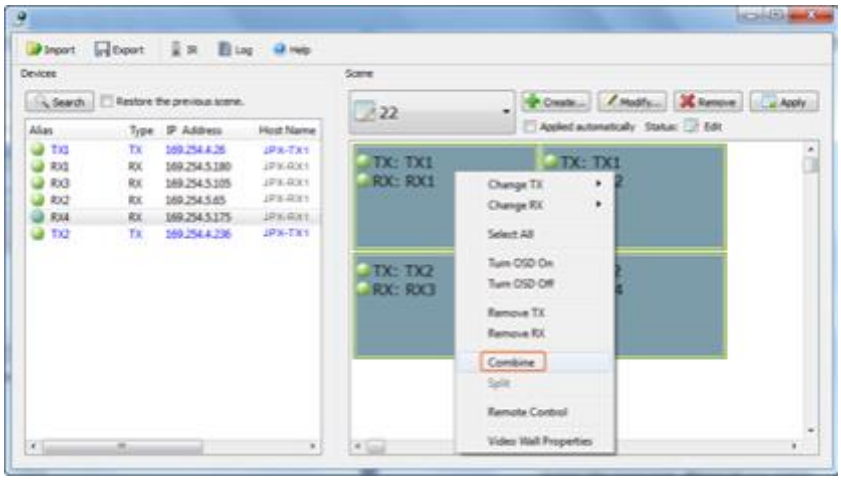
Step 4. Right click a cell, choose **Select All**.



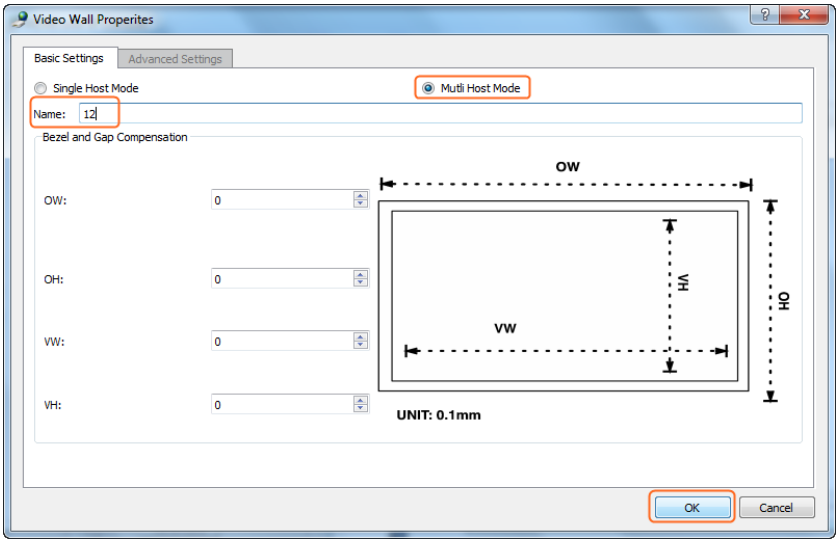
The color is different.



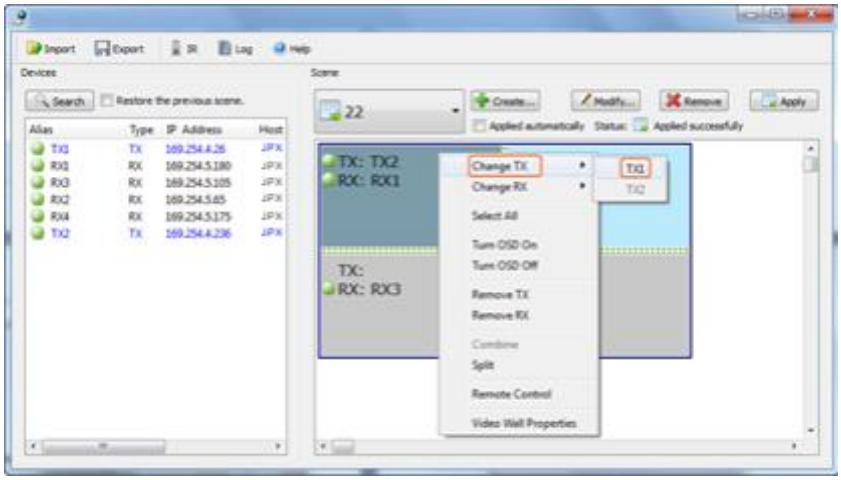
Step 5. Now right click the cells, choose **Combine**.



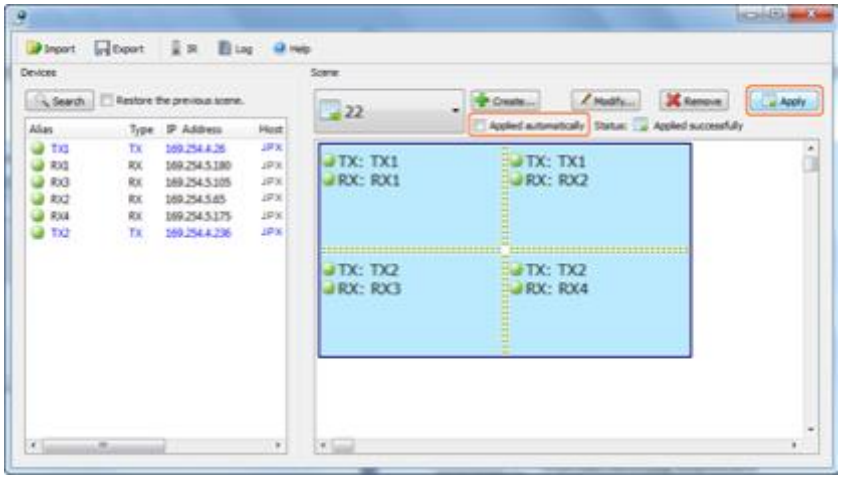
Step 6. You can see this page comes up. Check **Multi Host Mode**, input a name, and click **OK**.



Step 7. You may notice that the TXs are incorrect, please choose the correct one.



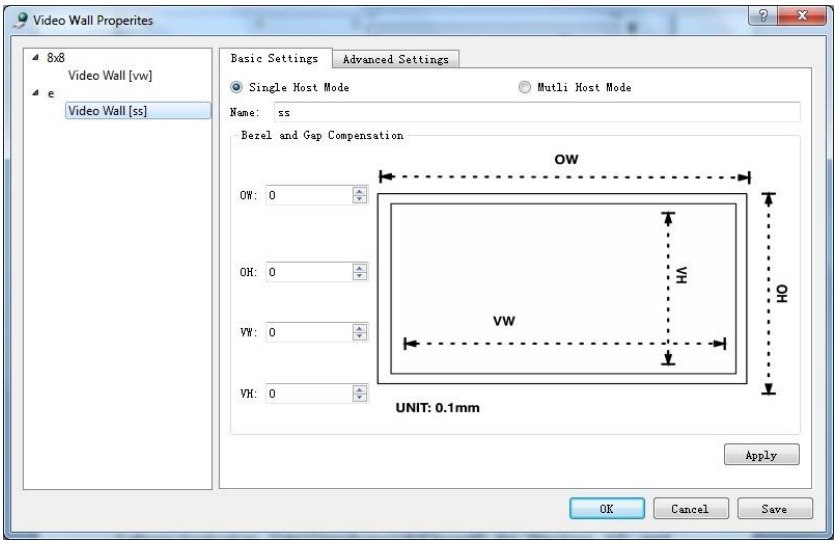
If **Applied Automatically** is not checked, please click **Apply** button, otherwise the combine doesn't take effect.



The Video-wall is configured successfully.

Video Wall Properties

Basic Settings

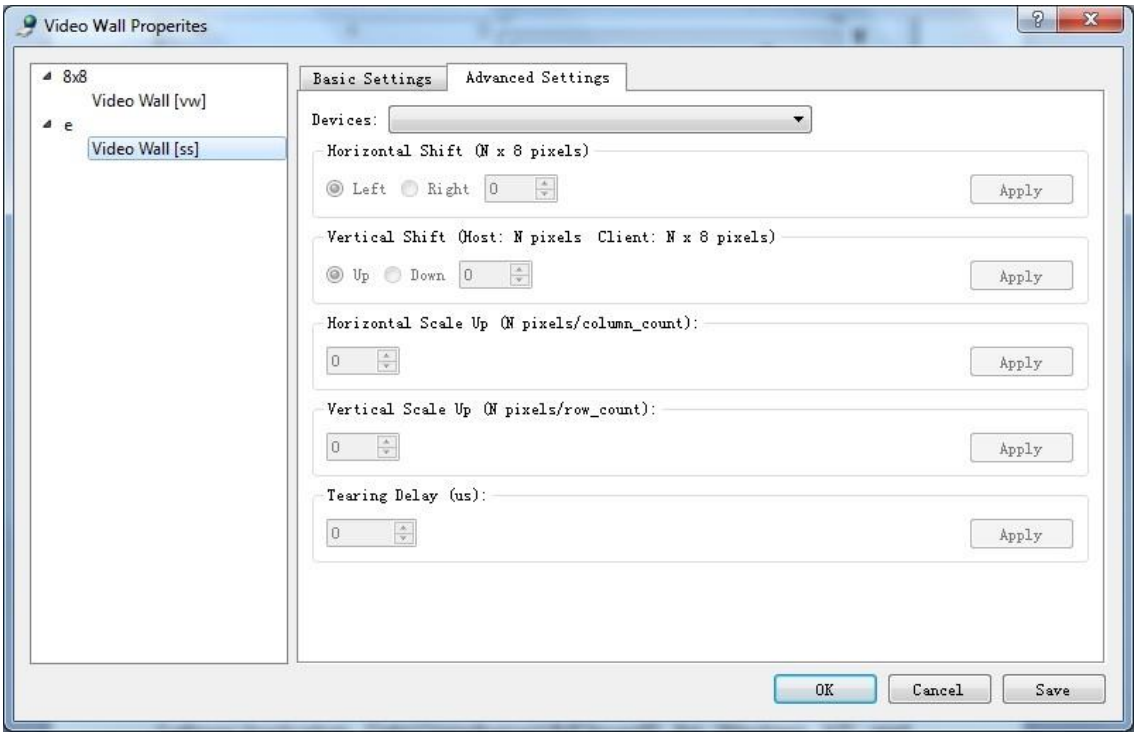


GUI Element	Description
Name	Give the Video Wall a name.
Single Host Mode	Single video-source mode, assign the same video-source to all cells.

Multi Host Mode	Multiple video-source mode, different cell rows could be assigned with different video sources. We recommend you check this mode.
OW, OH, VH, VW	set the Bezel and Gap Compensation of displays

We recommend you leave the settings as default value

Advanced Settings:



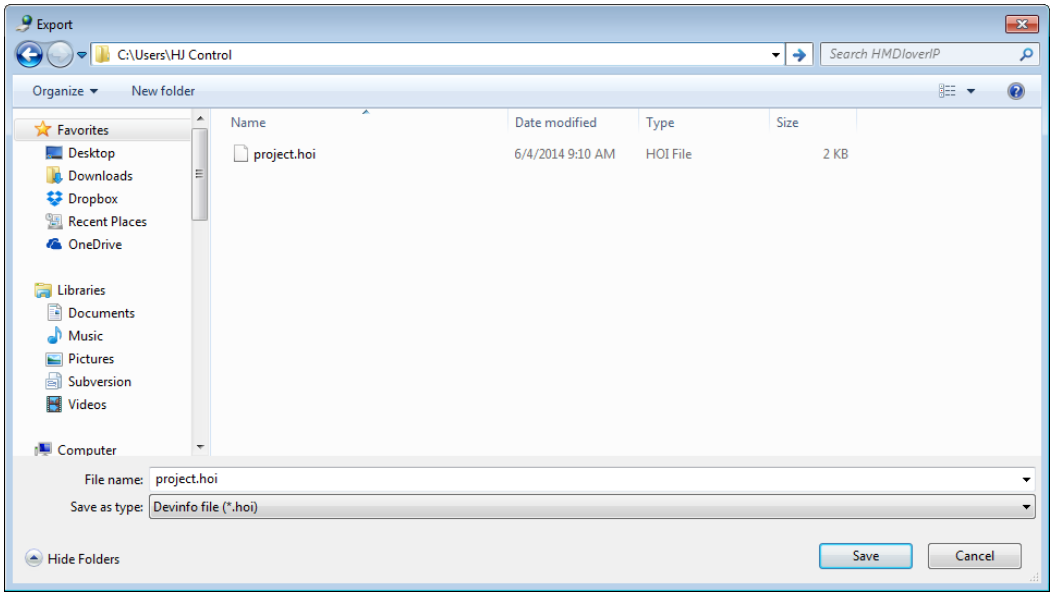
We recommend you leave the settings as default value.

Manage Configuration Files

When the control software is closed, the Windows operating system would save the configuration file **project.hoi** to the working directory of current user.

Viewing the Default Configuration File Directory

You can view the default directory from the **Import** dialog box displayed by clicking **Import** on the tool bar.



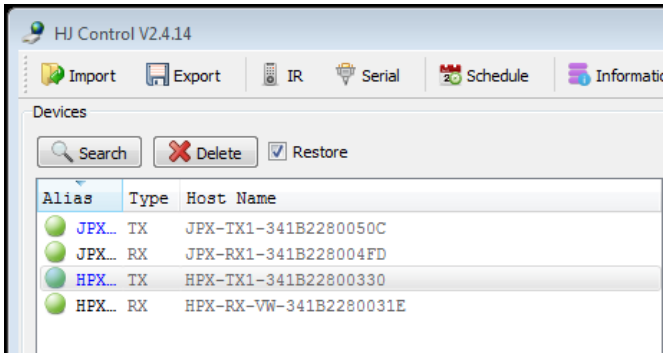
When running the control software next time, it would automatically read the configuration file **default.hoi**. Do not modify or delete the **default.hoi**.

Otherwise, errors may be encountered during program running.

Export or Import the Configuration File

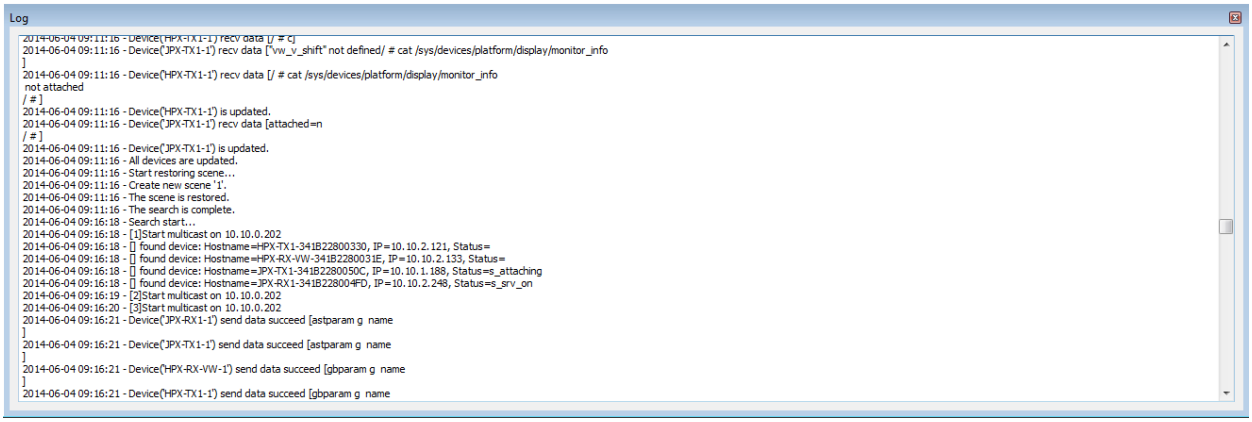
On the home screen of the control software, you can:

- Click **Export** on the tool bar to save the current devices and scene configuration file to a specified directory.
- Click **Import** on the tool bar to import the saved configuration file from this directory.



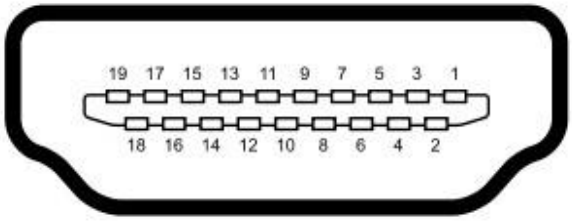
Log

The log records the tool operation and device communication information, which can be used for troubleshooting.


Log
2014-06-04 09:11:16 - Device('HPX-TX1-1') recv data [/ # c]
2014-06-04 09:11:16 - Device('JPX-TX1-1') recv data ["vw_v_shift" not defined/ # cat /sys/devices/platform/display/monitor_info
]
2014-06-04 09:11:16 - Device('HPX-TX1-1') recv data [/ # cat /sys/devices/platform/display/monitor_info
not attached
/ #]
2014-06-04 09:11:16 - Device('HPX-TX1-1') is updated.
2014-06-04 09:11:16 - Device('JPX-TX1-1') recv data [attached=n
/ #]
2014-06-04 09:11:16 - Device('JPX-TX1-1') is updated.
2014-06-04 09:11:16 - All devices are updated.
2014-06-04 09:11:16 - Start restoring scene...
2014-06-04 09:11:16 - Create new scene '1'.
2014-06-04 09:11:16 - The scene is restored.
2014-06-04 09:11:16 - The search is complete.
2014-06-04 09:16:18 - Search start...
2014-06-04 09:16:18 - [1]Start multicast on 10.10.0.202
2014-06-04 09:16:18 - [] found device: Hostname=HPX-TX1-341B22800330, IP=10.10.2.121, Status=
2014-06-04 09:16:18 - [] found device: Hostname=HPX-RX-VW-341B2280031E, IP=10.10.2.133, Status=
2014-06-04 09:16:18 - [] found device: Hostname=JPX-TX1-341B2280050C, IP=10.10.1.188, Status=s_attaching
2014-06-04 09:16:18 - [] found device: Hostname=JPX-RX1-341B228004FD, IP=10.10.2.248, Status=s_srv_on
2014-06-04 09:16:19 - [2]Start multicast on 10.10.0.202
2014-06-04 09:16:20 - [3]Start multicast on 10.10.0.202
2014-06-04 09:16:21 - Device('JPX-RX1-1') send data succeed [astparam g name
]
2014-06-04 09:16:21 - Device('JPX-TX1-1') send data succeed [astparam g name
]
2014-06-04 09:16:21 - Device('HPX-RX-VW-1') send data succeed [gbparam g name
]
2014-06-04 09:16:21 - Device('HPX-TX1-1') send data succeed [gbparam g name

CONNECTOR PIN DEFINITION

HDMI

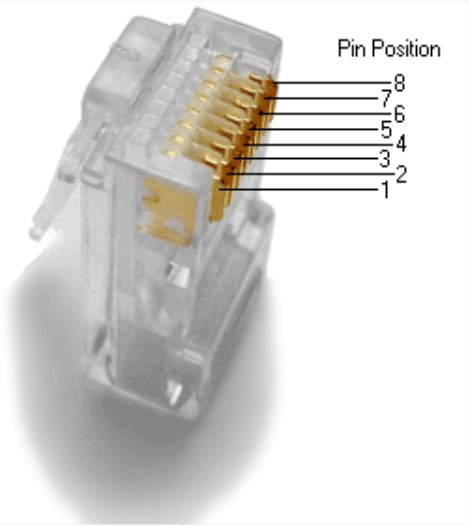


Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0–	Pin 16	SDA
Pin 3	TMDS Data2–	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock–	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1–	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

CAT5e/6/6A

T568A and T568B Wiring

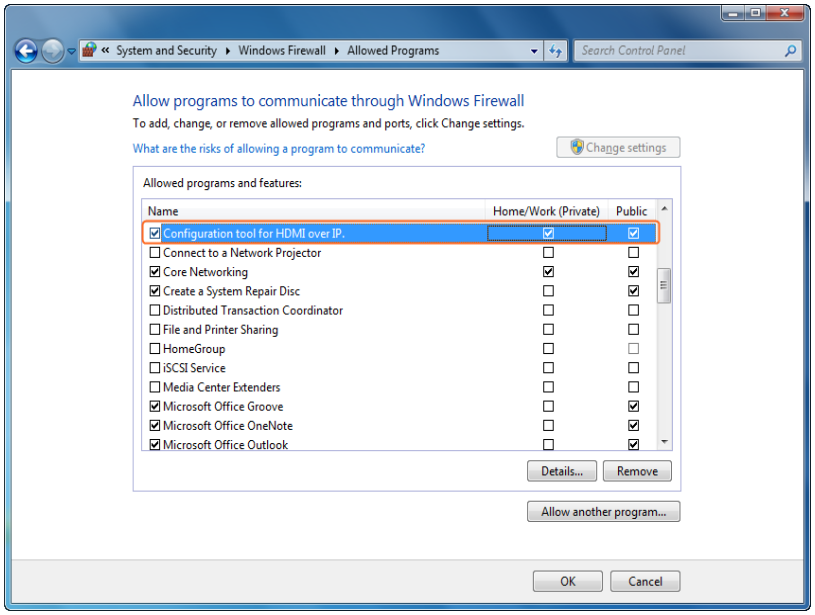
Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (socket is reversed)
1	3	2	tip	white/green stripe	white/orange stripe	
2	3	2	ring	green solid	orange solid	
3	2	3	tip	white/orange stripe	white/green stripe	
4	1	1	ring	blue solid	blue solid	
5	1	1	tip	white/blue stripe	white/blue stripe	
6	2	3	ring	orange solid	green solid	
7	4	4	tip	white/brown stripe	white/brown stripe	
8	4	4	ring	brown solid	brown solid	

1. All transmission distances are measured using Belden 1583A CAT5e 125MHz Solid UTP cable. The transmission distance is defined as the distance between the video source and the display.
2. To reduce the interference among the unshielded twisted pairs of wires in UTP cable, you can use shielded STP cables to improve EMI problems, which is worsen in long transmission.

APPENDIX 1 Troubleshooting

Why HJ Control cannot find any devices?

1) Check Windows Firewall. Take Windows 7 as an example: Click **Start** menu, go to **Control Panel** > **System and Security** > **Windows Firewall** > **Allowed Programs**, highlight **Configuration tool for HDMI over IP**, check **Home/Work (Private)** and **Public**.



2) Check the IP address and subnet mask of the PC. The network segment for IP address is 169.254.*x.x* and the subnet mask is 255.255.0.0, the PC and Transmitter/Receiver should be in the same network segment. For details, please refer to **PC control tool** in chapter **Operation**.
3) Check the IGMP Snooping status in Switch. This function should be enabled.

Why display shows no picture with RX connected?

Check the following items:

- All devices are powered on.
- A picture is achieved when connecting the source directly to the TV.
- TV has switched to the right signal source input mode using your TV remote, such as switching to HDMI 1 if HDMI 1 interface is connected to the RX via a HDMI cable.
- All the cables are qualified.
- The Switch supports IGMP snooping and this function is enabled.
- If error messages are displayed at the bottom of the screen, here are some solutions:

Message	Possible Causes	Solutions
Remote IP: unknown	RX is restored to default settings.	Configure TX and RX through HJ Control.
	RX is being rebooted.	Wait until RX is rebooted to view the picture.
No instructions are displayed	Poor cable connection to RX or TV	Insert the HDMI cable into RX or TV again.
Waiting for video source - standby	Poor cable connection to TX or input source.	Insert the HDMI cable into TX or input source again.
Network link is down	Poor cable connection to RX or switch.	Insert the network cable into RX or switch again.
No RS-232 Control	Switch on front of unit is set to Debug	Change switch to Normal.
	Cable has TX and RX swapped	Try swapping the RX and TX
	Baud rate	Check configuration of the baud rate to match the device being controlled.
Trying to find the transmitter	The RX is trying to find the Transmitter.	Wait until the picture is displayed.
	Poor cable connection to TX	Insert the network cable into the TX again.
	TX/RX is not linked.	Configure TX and RX through HJ Control.

APPENDIX 2 Firmware Update

For the latest firmware updates please go www.auroramm.com

You must be signed up to the Customer Portal in order to download firmware with instructions on how to update.

APPENDIX 3 RS-232 Debug

Switch on front must be set to debug.

IP Address Configuration:
Send command **"ifconfig"** via the RS232 of the device, to see the current IP address and net mask of the device. Keep in mind if it has been changed but not rebooted it may not be up to date. If so reboot the device and re-enter the command.

Factory Default:
Send command **"reset_to_default.sh"** to reset the device to default IP address.

APPENDIX 4 Technical Specifications

Model Name	JPX Series
Technical	**JPX Series**
Data Rate	150Mbps Max
Distance	330ft / 100m Max
I/O Connections	**Transmitter** 1 x USB (B type), 1 x RJ45 port, 1 x HDMI IN, 1 x HDMI OUT, 1 x RS232 (3.5 mm phoenix) **Receiver** 4 x USB (A type), 1 x RJ45 port, 1 x HDMI OUT, 1 x RS232, 1 x AUDIO OUT
Input Video Signal	1.2 volts p-p
Input DDC Signal	5 volts p-p (TTL)
Supported Video Formats	1080P / 1080i / 720P / 576P / 480P/ 576i / 480i
Output Video	HDMI + HDCP
Output Audio	Analog Stereo
Mechanical	**JPX Series**
Housing	Black Painted Steel
Dimensions [L x W x H]	5.51" × 4.53" × 0.98" (140mm × 115mm × 25mm)
Weight	1.98lbs (0.9Kg)
Mounting	Ear Tabs
Power supply	12V DC
Power consumption	5W
Operation temperature	0~35°C [32~95°F]
Storage temperature	-20~70°C [-4~140°F]
Relative humidity	10~90% RH [no condensation]

Specifications subject to change without notice.

APPENDIX 5 Warranty

Limited 3 Year Warranty

Aurora Multimedia Corp. (“Manufacturer”) warrants that this product is free of defects in both materials and workmanship for a period of 3 years as defined herein for parts and labor from date of purchase. This Limited Warranty covers products purchased in the year of 2009 and after. Motorized mechanical parts (Hard Drives, DVD, etc), mechanical parts (buttons, doors, etc), remotes and cables are covered for a period of 1 year. Touch screen displays are covered for 1 year; touch screen overlay components are covered for 90 days. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

A. The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,

B. The product has not been operated in accordance with procedures specified in operating instructions: or,

C. The product has been repaired and or altered by other than manufacturer or authorized service center; or,

D. The product's original serial number has been modified or removed: or,

E. External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product.

F. Part(s) are no longer available for product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

No other warranty, express or implied other than Manufacturer's shall apply.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.

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